

IN THE CLAIMS

1. (Currently Amended) Mixer circuit (31) comprising:
  - a down-conversion mixing component (33) arranged for down-converting an input radio frequency signal ( $I_{rf+}$ ,  $I_{rf-}$ ); and
  - an active mixer load circuit (34) connected to output terminals of said down-conversion mixing component (33), wherein said active mixer load circuit (34) includes an active mixer load (51, T1, T2) and modulator ~~modulating means~~ (S1-S4) arranged for modulating a flicker noise produced by said active mixer load (51, T1, T2) away from the signal band of a signal ( $I_{bb+}$ ,  $I_{bb-}$ ) output by said down-conversion mixing component (33).
2. (Currently Amended) Mixer circuit (31) according to claim 1, wherein said modulator ~~modulating means~~ includes a plurality of switching elements (S1-S4).
3. (Currently Amended) Mixer circuit (31) according to claim 2, wherein said active mixer load includes a first transistor (T1), a second transistor (T2) and an operational amplifier (51), wherein a first output terminal of said down-conversion mixing component (33) is connected to a first input of said operational amplifier (51), wherein a second output terminal of said down-conversion mixing component (33) is connected to a second input of said operational amplifier (51), wherein a reference common mode voltage ( $V_{CMREF}$ ) is applied to a reference common mode voltage input of said operational amplifier (51), wherein an output of said operational amplifier (51) is connected in parallel to a respective gate of said first transistor (T1) and said second transistor (T2), and wherein said switching elements (S1-S4) are arranged for connecting alternately on the one hand said first output terminal of said down-conversion mixing component (33) via said first transistor (T1)

and said second output terminal of said down-conversion mixing component ~~(33)~~ via said second transistor ~~(T2)~~ to ground ~~(Gnd)~~, and on the other hand said first output terminal of said down-conversion mixing component ~~(33)~~ via said second transistor ~~(T2)~~ and said second output terminal of said down-conversion mixing component ~~(33)~~ via said first transistor ~~(T1)~~ to ground ~~(Gnd)~~.

4. (Currently Amended) Mixer circuit ~~(31)~~ according to ~~one of claim 1~~ claims 1 to 3, wherein said down-conversion mixing component ~~(33)~~ is adapted to down-convert radio frequency current mode signals.
5. (Currently Amended) Mixer circuit according to ~~one of claim 1~~ claims 1 to 3, wherein said down-conversion mixing component is adapted to down-convert radio frequency voltage mode signals.
6. (Currently Amended) Receiver circuit ~~(10)~~ for receiving radio frequency signals and for providing corresponding down-converted signals, which receiver circuit ~~(10)~~ comprises a mixer circuit ~~(31)~~ according to claim 1 ~~one of the preceding claims~~.
7. (Currently Amended) Receiver circuit ~~(10)~~ according to claim 6, wherein at least said mixing circuit ~~(31)~~ and at least one component ~~(15)~~ of said receiver circuit ~~(10)~~ arranged for processing digital baseband signals are integrated in a single chip ~~(16)~~.
8. (Currently Amended) Chip comprising at least a mixer circuit ~~(31)~~ according to claim 1 ~~one of claims 1 to 5~~.
9. (Currently Amended) Chip according to claim 8, wherein said mixer circuit ~~(31)~~ is implemented on said chip with a deep sub-micron semiconductor technology.

10. (Currently Amended) Apparatus comprising a mixer circuit ~~(31)~~ according to claim 1 ~~one of claims 1 to 5~~.
11. (Currently Amended) Method for use in a mixer circuit ~~(31)~~ comprising a down-conversion mixing component ~~(33)~~ and an active mixer load circuit ~~(34)~~, said method comprising:
- down-converting a received radio frequency signal ~~( $I_{rf+}$ ,  $I_{rf-}$ )~~ by means of said down-conversion mixing component ~~(33)~~;
  - controlling an output voltage of said down-conversion mixing component ~~(33)~~ by means of an active mixer load ~~(51, T1, T2)~~ of said active mixer load circuit ~~(34)~~; and
  - modulating a flicker noise produced by said active mixer load ~~(51, T1, T2)~~ away from a ~~the~~ signal band of said down-converted radio frequency signal ~~( $I_{bb+}$ ,  $I_{bb-}$ )~~.
12. (New) Apparatus, comprising:
- means for down-converting an input radio frequency signal; and
  - active mixer load means and modulating means connected to output terminals of said means for down-converting for modulating a flicker noise produced by said active mixer load means away from a signal band of a signal output by said means for down-converting.